

NOTICES OF PROPOSED RULEMAKING

Unless exempted by A.R.S. § 41-1005, each agency shall begin the rulemaking process by 1st submitting to the Secretary of State's Office a Notice of Rulemaking Docket Opening followed by a Notice of Proposed Rulemaking that contains the preamble and the full text of the rules. The Secretary of State's Office publishes each Notice in the next available issue of the *Register* according to the schedule of deadlines for *Register* publication. Due to time restraints, the Secretary of State's Office will no longer edit the text of proposed rules. We will continue to make numbering and labeling changes as necessary.

Under the Administrative Procedure Act (A.R.S. § 41-1001 et seq.), an agency must allow at least 30 days to elapse after the publication of the Notice of Proposed Rulemaking in the *Register* before beginning any proceedings for adoption, amendment, or repeal of any rule. A.R.S. §§ 41-1013 and 41-1022.

NOTICE OF PROPOSED RULEMAKING

TITLE 20. COMMERCE, BANKING, AND INSURANCE
CHAPTER 5. THE INDUSTRIAL COMMISSION OF ARIZONA

PREAMBLE

1. Sections Affected

Article 4
R20-5-401
R20-5-402
R20-5-404
R20-5-406
R20-5-407
R20-5-408
R20-5-409
R20-5-410
R20-5-411
R20-5-412
R20-5-413
R20-5-414
R20-5-415
R20-5-416
R20-5-417
R20-5-418
R20-5-419
R20-5-420

Rulemaking Action

Amend
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New Section

2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):

Authorizing Statute: A.R.S. § 23-474(3)

Implementing Statutes: A.R.S §§ 23-476(A)(1) and 23-485

3. The name and address of agency personnel with whom persons may communicate regarding the rulemaking:

Name: Laura McGrory, Assistant Chief Counsel, Legal Division

Address: Industrial Commission of Arizona
800 West Washington
Phoenix, Arizona 85007

Telephone: (602) 542-5740

Fax: (602) 542-6783

4. An explanation of the rule, including the agency's reason for initiating the rule:

In response to the requirement of A.R.S § 41-1072 *et seq.* to enact licensing time-frame rules, the Industrial Commission initiated rulemaking to provide time-frames and requirements for the issuance of special inspector certificates under A.R.S. § 23-485. The Industrial Commission also recognized that R20-5-401 *et seq.* needed to be updated to reference and include the most recent changes in national consensus standards applicable to the safe installation, operation, and maintenance of boilers and lined hot

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water storage heaters. Boiler and lined hot water storage heater manufacturers are currently producing their products to meet the more recent national consensus standards. The Industrial Commission finds it necessary to update the rules to ensure that these newer devices are installed, operated, and maintained under the standards that they were designed, manufactured, and installed to meet. Lastly, in an effort to make the rules easier to read, the Industrial Commission is proposing to amend the style, form and language of the rules.

5. A showing of good cause why the rule is necessary to promote statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:

The proposed rule changes do not diminish a previous grant of authority of a political subdivision of this state.

6. The preliminary summary of the economic, small business, and consumer impact:

The economic, small business, and consumer impact statement focuses on 2 areas. The 1st area is the impact on the Industrial Commission and general public as a result of the proposed amendments. The 2nd area is the impact on the regulated community as a result of the proposed time-frames and incorporating by reference, and requiring compliance with, updated national standards applicable to boilers and lined hot water heaters. The regulated community includes owners, users, operators, and authorized inspectors of boilers or lined hot water heaters.

The proposed adoption of licensing time-frames rules and the proposed adoption of amendments to update the language, style, and format of the rules are expected to have minimal economic impact on the Industrial Commission. The costs incurred by the Industrial Commission are the costs associated with the rulemaking process. The Industrial Commission does not anticipate that the adoption of licensing time-frame rules will require additional staff or time. The Industrial Commission anticipates that both the agency and the public will benefit from having rules define the certification process for special inspectors under A.R.S. § 23-485.

The Industrial Commission anticipates that the proposed adoption of rules incorporating by reference and requiring compliance with updated national standards for boilers and lined hot water storage heaters will not impact its responsibility to conduct inspections. The number and scope of inspections will not change as result of incorporating updated national standards.

The Industrial Commission anticipates that the proposed adoption of rules incorporating by reference and requiring compliance with updated national standards for boilers and lined hot water storage heaters will not have an impact on the majority of persons who use, operate, or own boilers or lined hot water storage heaters since approximately 98% of the boilers and lined hot water storage heaters operated in Arizona (10,000 units known by the Industrial Commission) already comply with the current national standards. However, to reduce the impact upon owners or users of boilers and lined hot water storage heaters installed, repaired, or reinstalled before the effective date of these rules, the proposed rules permit owners or users to comply with the updated national standards or comply with the national standards in effect at the time boiler or heater was originally installed, repaired, or reinstalled.

Those owners and users who repair or reinstall older boilers or lined hot water heaters after the effective date of this Article will be required to ensure that the repairs and reinstallations comply with the incorporated national standards. The Industrial Commission believes that the majority of owners or users will not experience a significant increase in cost, if any, as a result of the proposed amendments. The cost to repair or reinstall a boiler/heater under the old standards approximates that under the updated national standards. In some instances, an owner or user may experience a cost savings depending on the nature of the repair. For the very old boiler or heater (less than 2% of the total units known) the cost to repair or reinstall the boiler or heater under the current national standards could be significant. In those cases, an owner or user may elect to purchase a new boiler or heater. The cost to purchase a new boiler or heater varies depending on the size of the boiler or heater.

Users and owners of fully attended boilers benefit from the proposed amendments because the amendments permit less frequent internal inspections of a fully attended boiler. This saves an owner or user time and money because the boiler does not have to be shut down as frequently for inspections.

Requiring compliance with updated national standards protects persons working on and around a boiler or lined hot water heater and ensures the safety of the general public. The safety of workers and the public outweighs the costs incurred by an owner or user of a boiler or lined hot water heater.

7. The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, and consumer impact statement:

Name: Tom Rennie, Chief Boiler Inspector
Boiler Section of the Division of Occupational Safety and Health

Address: Industrial Commission of Arizona
800 West Washington St.
Phoenix, Arizona 85007

Telephone: (602) 542-5795

Fax: (602) 542-1614

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8. The time, place, and nature of the proceedings for the adoption, amendment, or repeal of the rule or, if no proceeding is scheduled, where, when, and how persons may request an oral proceeding on the proposed rule:

Date: July 30, 1998

Time: 9:30 a.m.

Location: Industrial Commission of Arizona, 3rd Floor Conference Room
800 West Washington St., Phoenix, Arizona 85007

Nature: Oral and written comments will be accepted on or before the date set forth in this paragraph.

9. Any other matters prescribed by statute that are applicable to the specific rule or class of rules:

None.

10. Incorporation by reference and their location in the rules:

ASME Boiler and Pressure Vessel Code, Sections I, II, IV, V, and IX, 1995 Edition and addenda as of June 30, 1997, is referenced in R20-5-404(A)(1), R20-5-406(F), R20-5-413 (D)(9).

Standard for Oil-Fired Water Heaters, UL 732, ANSI Z95.3-1975, April 17, 1975, is referenced in R20-5-404(A)(3).

American National Standard for Gas Water Heaters, ANSI Z21.10.3-1975, Volume 3, October 17, 1975, is referenced in R20-5-404(A)(4).

American National Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1-1995 and 1996 addenda is referenced in R20-5-404(A)(5).

ANSI Z223.1-1988, NFPA 54, *National Fuel Gas Code* is referenced in R20-5-404(A)(7).

National Board Inspection Code, ANSI/NB-23 1995 Edition and 1996 addenda is referenced in R20-5-406(B) and (E) and R20-5-407(A) and (D).

National Board Rules and Recommendations for the Design and Construction of Boiler Blowoff Systems, 1991 Edition, is referenced in R20-5-415(A).

ANSI/ASME B31.1-1995 Edition, *Power Piping* is referenced in R20-5-415(G)(3).

National Board of Boiler and Pressure Vessel Inspectors, *Rules and Regulations*, Article 1, NB 215, 1994, is referenced in R20-5-420(E)(3).

11. The full text of the rules follows:

TITLE 20. COMMERCE, BANKING, AND INSURANCE
CHAPTER 5. THE INDUSTRIAL COMMISSION OF ARIZONA

**ARTICLE 4. ARIZONA BOILER AND LINED HOT WATER
HEATER RULES REGULATIONS**

- R20-5-401. Applicability
- R20-5-402. Definitions
- R20-5-404. Minimum Standards for Boilers and Lined Hot Water Storage Heaters
- R20-5-406. Repairs and Alterations
- R20-5-407. Inspection of Boilers and Lined Hot Water Storage Heaters and Issuance of Inspection Certificates
- R20-5-408. Frequency of Inspection
- R20-5-409. Notification and Preparation for Inspection
- R20-5-410. Report of Accident
- R20-5-411. Hydrostatic Tests
- R20-5-412. Automatic Low Water Fuel Cutoff Devices or and/or Combined Water Feeding/Fuel Cutoff Devices
- R20-5-413. Safety and Safety Relief Valves
- R20-5-414. Pressure Reducing Valves
- R20-5-415. Boiler Blowdown/Blowoff Equipment
- R20-5-416. Maximum Allowable Working Pressure
- R20-5-417. Maintenance and Operation of Power Boilers; Qualifications for Operators of Power Boilers
- R20-5-418. Age Limit of Non-standard Boilers

R20-5-419. Request to Reinstall Boiler or Lined Hot Water Heater

R20-5-420. Special Inspector Certificate under A.R.S. § 23-485

**ARTICLE 4. ARIZONA BOILER AND LINED HOT WATER
HEATER RULES REGULATIONS**

R20-5-401. Applicability

This Article applies to all boilers and lined hot water storage heaters operated in the State of Arizona, except the following:

1. Boilers and lined hot water storage heaters regulated by the United States Government;
2. Boilers and lined hot water storage heaters operated in private residences or apartment complexes of not more than 6 six units; and
3. Boilers and lined hot water storage heaters operated on Indian reservations.

R20-5-402. Definitions

In this Article, unless the text otherwise requires:

1. "Act" means Arizona Revised Statutes, Title 23, Chapter 2, Article 11.
2. "Alteration" means a change in any item described on the original manufacturer's data report which affects the

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pressure-containing ability of the boiler except for "Repairs."

"Applicant" means an individual requesting permission to act as a special inspector under A.R.S. § 23-485.

3. "ASME A-S-M-E Code" means the *Boiler and Pressure Vessel Code*, Sections I, II, IV, V, and IX, published by the American Society of Mechanical Engineers.
4. "Authorized Inspector" means an authorized any of the following: a. Authorized representative under pursuant to A.R.S. § 23-471.1 or a special inspector under b. Special Inspector pursuant to A.R.S. § 23-485.
5. "Blowdown tank" or "blowdown separator" means an ASME stamped vessel designed to receive discharged steam or hot water from a boiler.
6. "Condemned boiler or lined hot water storage heater" means a boiler or lined hot water storage heater that has been inspected and found to be unsafe by the Director or authorized inspector representative and which has been stamped or tagged in accordance with R20-5-407(H).
7. "Direct fired jacketed steam kettle" means a metallic vessel (other than a sterilizer) in which steam or vapor is generated.
8. "External inspection" means an examination of a boiler or lined hot water storage heater performed inspection made by an authorized inspector when the a boiler or lined hot water storage heater is in operation.
"Fully attended boiler" means a boiler that is operated by an individual who meets the requirements of R20-5-417 and whose primary function is the care, maintenance, and operation of the boiler and the equipment associated with the boiler system.
9. "Inspection certificate" means a document certificate issued by the Division for the operation of a boiler or lined hot water storage heater under pursuant to the Act.
10. "Internal inspection" means a complete examination inspection of the internal and external surfaces of a boiler or lined hot water storage heater by an authorized inspector after the boiler or lined hot water storage heater unit is shut down.
11. "Relief valve" means an ASME stamped automatic pressure relieving device designed for liquid service which is actuated by the pressure upstream of the valve and opens further with an increase in pressure above the stamped pressure.
12. "Repairs" means work necessary to restore a boiler or lined hot water storage heater to a safe and satisfactory operating condition that complies with this Article, provided in all cases the basic design is not altered and the repairs follow the ASME Code to which the unit was originally constructed.
13. "Safety relief valve" means an ASME stamped automatically pressure-actuated relieving device designed for use either as a safety valve or as a relief valve.
14. "Safety valve" means an ASME stamped automatic pressure relieving device designed for steam or vapor service which is actuated by the pressure upstream of the valve and characterized by full opening pop-action.
15. "Secondhand boiler or secondhand lined hot water storage heater" means a boiler or lined hot water storage heater that which has changed both location and ownership since original installation.

"User" means a person or entity that does not have legal title to a boiler or lined hot water storage heater, but has control and responsibility for the operation of a boiler or lined hot water storage heater (for example, lessee).

R20-5-404. Minimum Standards for Boilers and Lined Hot Water Storage Heaters

A. Compliance with National Consensus Standards.

1. An owner, user, or operator of a boiler installed, repaired, replaced or reinstalled in Arizona, on or after the effective date of this Article shall comply with the *ASME Boiler and Pressure Vessel Code*, Sections I, II, IV, V, and IX, 1995 Edition and addenda as of June 30, 1997, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the American Society of Mechanical Engineers.
2. An owner, user, or operator of a boiler installed, repaired, replaced or reinstalled in Arizona, before the effective date of this Article shall comply with the *ASME Boiler and Pressure Vessel Code* in effect at the time of most recent installation, repair, replacement, or reinstallation of the boiler in Arizona prior to the effective date of this Article, or as an alternative, may comply with subsection (A)(1).
3. An owner, user, or operator of an oil-fired lined hot water storage heater installed, operated, repaired, replaced, or reinstalled in Arizona, shall comply with the *Standard for Oil-Fired Water Heaters*, UL 732, ANSI Z95.3-1975, April 17, 1975, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from Underwriters Laboratories, Inc.
4. An owner, user, or operator of a gas-fired lined hot water storage heater installed, operated, repaired, replaced, or reinstalled in Arizona shall comply with the *American National Standard for Gas Water Heaters*, ANSI Z21.10.3-1975, Volume 3, October 17, 1975, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the American National Standards Institute.
5. An owner, user, or operator of a boiler installed, repaired, replaced, or reinstalled in Arizona after the effective date of this Article shall comply with the *American National Standard for Controls and Safety Devices for Automatically Fired Boilers*, ANSI/ASME CSD-1-1995 and 1996 addenda, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated matter. A copy of this referenced material is available for review at the Industrial Commission of Ari-

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zona and may be obtained from the American Society of Mechanical Engineers.

6. An owner, user, or operator of a boiler installed, repaired, replaced or reinstalled in Arizona, before the effective date of this Article shall comply with the *American National Standard for Controls and Safety Devices for Automatically Fired Boilers* in effect at the time of most recent installation, repair, replacement, or reinstallation of a boiler in Arizona prior to the effective date of this Article, or as an alternative, may comply with subsection (A)(5)
 7. A permanent source of outside air shall be provided for each boiler and lined hot water storage heater room to assure complete combustion of the fuel as required by ANSI Z223.1-1988, NFPA 54, *National Fuel Gas Code* incorporated by reference and on file with the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated matter. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the American National Standards Institute.
- B. Installation, Maintenance, and Repair Requirements.**
1. An owner, user, or operator shall ensure that a signed copy of the Manufacturer's Data Report for a boiler or lined hot water storage heater is kept at the location of the boiler or lined hot water storage heater and available for review upon request from an authorized inspector.
 2. A boiler shall have masonry or structural supports of sufficient strength and rigidity to safely support the boiler and its contents without any vibration in the boiler or its connecting piping.
 3. A boiler or lined hot water storage heater installed in new construction shall have at least 3 feet clearance between the top of the boiler or lined hot water storage heater and the ceiling, and at least 3 feet clearance between all sides of the boiler or lined hot water storage heater and adjacent walls, structures, or other equipment.
 4. A boiler with a manhole shall have at least 5 feet clearance between the boiler manhole and any wall, ceiling, or piping.
 5. An owner, user, or operator shall ensure that a boiler or lined hot water storage heater is located to provide space to permit an operator or authorized inspector to safely operate, maintain, and inspect the boiler, lined hot water storage heater and equipment associated with the boiler or lined hot water storage heater systems.
 6. A newly constructed boiler room in excess of 500 square feet floor area and containing 1 or more boilers having a total fuel capacity of 1,000,000 BTU per hour, or equivalent electrical heat input, shall have at least 2 exits on each level of the boiler or boilers. Each exit shall be remotely located from the other exits.
 7. An owner, user, or operator shall ensure that a boiler or lined hot water storage heater room is kept clean and with no obstructions to the boiler or lined hot water storage heater.
 8. An owner, user, or operator shall ensure that combustible, flammable, or explosive materials are not stored in a boiler or lined hot water storage heater room.
 9. If a boiler or lined hot water storage heater is moved outside Arizona for temporary use or repairs, the owner, user, or operator shall not reinstall the boiler or lined hot

water storage heater in Arizona until the owner, user, or operator notifies and receives verbal or written permission from the Division under R20-5-419 to reinstall the boiler or lined hot water storage heater. If the Division grants permission to reinstall the boiler or lined hot water storage heater, the owner, user, or operator shall not operate the reinstalled boiler or lined hot water storage heater until the owner, user, or operator receives an inspection certificate from the Division under this Article.

10. Before installing, repairing, replacing, or reinstalling any new or used boiler, an owner, user, or operator shall notify an authorized inspector.
 11. Prior to installing a used boiler, an owner, user, or operator shall ensure that the boiler receives a hydrostatic test under R20-5-411.
 12. An owner, user, or operator of a portable boiler shall notify an authorized inspector before installing the portable boiler and shall not operate the portable boiler until the owner, user, or operator receives an inspection certificate from the Division.
- A.** Boilers installed and operated in this state prior to the effective date of this Section shall comply with the *ASME Boiler and Pressure Vessel Code*, Sections I, II, IV, V, and IX, 1977 Edition and addenda as of December 31, 1979, (but not including any later amendments or additions) which is incorporated herein by reference and on file with the Office of the Secretary of State. Copies of these referenced materials are available for review at the Industrial Commission of Arizona and may be obtained from the American Society of Mechanical Engineers. A signed copy of the Manufacturer's Data Report shall be on file with the owner/operator of the boiler.
- B.** Boilers installed and operated in this state on or after the effective date of this Section shall comply with the *ASME Boiler and Pressure Vessel Code*, Sections I, II, IV, V, and IX, 1989 Edition and addenda as of December 31, 1990, (but not including any later amendments or additions) which is incorporated herein by reference and on file with the Office of the Secretary of State. Copies of these referenced materials are available for review at the Industrial Commission of Arizona and may be obtained from the American Society of Mechanical Engineers. A signed copy of the Manufacturer's Data Report shall be on file with the owner/operator of the boiler.
- C.** Oil-fired lined hot water storage heaters operated in this state shall comply with the *Standard for Oil-Fired Water Heaters*, UL 732m Third Edition, June 20, 1974, (but not including any later amendments or additions) which is incorporated herein by reference and on file with the Office of the Secretary of State. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from Underwriters Laboratories, Inc.
- D.** Gas-fired lined hot water storage heaters operated in this state shall comply with the *American National Standard for Gas Water Heaters*, ANSI Z21.10.3-1975, Volume 3, (but not including any later amendments or additions) which is incorporated herein by reference and on file with the Office of the Secretary of State. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the American National Standards Institute.
- E.** Owners/operators of boilers installed and operated on or after the effective date of this Section shall comply with the *American National Standard for Controls and Safety Devices for*

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Automatically Fired Boilers, ANSI/ASME CSD-1-1982 and 1984 addenda, (but not including any later amendments or additions) which is incorporated herein by reference and on file with the Secretary of State. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the American Society of Mechanical Engineers.

- F. Each boiler shall be supported by masonry or structural supports of sufficient strength and rigidity to safely support the boiler and its contents without vibration in the boiler or its connecting piping.
- G. Boilers and lined hot water storage heaters installed in new construction shall have a minimum distance of three feet between the top of the vessel proper and the ceiling and at least three feet between all sides of the vessel and adjacent walls, structures or other equipment. Boilers having manholes shall have five feet clearance between the manhole opening and any wall, ceiling or piping that may prevent a person from entering the boiler. Boilers and lined hot water storage heaters shall be located so that adequate space is provided for the proper operations, maintenance and inspection of equipment and appurtenances.
- H. Boiler rooms for new construction exceeding 500 square feet floor area and containing one or more boilers having a total fuel capacity of 1,000,000 BTU per hour, or equivalent electrical heat input, shall have at least two means of exit for each level. Each exit shall be remotely located from the others.
- I. A permanent source of outside air shall be provided for each boiler and lined hot water storage heater room to assure complete combustion of the fuel as well as to maintain a minimum of 19.5 percent oxygen in the air of the room.
- J. Boiler and lined hot water storage heater rooms shall be kept clean and with free access to the boiler or lined hot water storage heater. No combustible, flammable or explosive materials shall be stored within the room.
- K. If a boiler or lined hot water storage heater is moved outside Arizona for temporary use or repairs, the owner/operator shall obtain permission from the Division before reinstalling the boiler or lined hot water storage heater in Arizona.
- L. Prior to installing a used or secondhand boiler or lined hot water storage heater, an inspection shall be made by an authorized inspector. The boiler or lined hot water storage heater shall comply with the requirements of this Article, including a hydrostatic test pursuant to R20-5-411.

R20-5-406. Repairs and Alterations

- A. If Where repairs or alterations may affect the working pressure or safety of a boiler, an owner, user, or operator shall consult with an authorized inspector before having the repairs or alterations made, an authorized inspector shall be called for consultation. The authorized inspector shall provide the owner, user, or operator information regarding as to the best method to repair or alter the boiler of making repairs or alterations. The owner, user, or operator shall ensure that an authorized inspector inspects and approves the repairs and alterations after the After such repairs or alterations are made, they shall be inspected and approved by the authorized inspector.
- B. Repairs and alterations to boilers shall conform to the applicable provisions of the *National Board Inspection Code, ANSI/NB-23-1995 Edition and 1996 addenda Rev. 7, 1989, (but not including any later amendments or additions) which is incorporated herein by reference and on file with the Office of the*

Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors.

- C. An owner, user, or operator shall not permit an individual to remove or repair a safety appliance of a boiler or lined hot water storage heater. No safety appliance prescribed by this Article shall be removed or repaired while the boiler or lined hot water storage heater is in operation. An owner, user, or operator shall not permit a person to remove or repair a safety appliance of a boiler or lined hot water storage heater not in operation except as provided under the ASME Code. If an owner, user, or operator permits a person to remove a safety appliance from a boiler or lined hot water heater as provided under the ASME Code, then the owner, user, or operator shall ensure that the safety appliance is reinstalled in proper working order before the boiler or lined hot water storage heater is placed back into operation.
- D. A person shall not alter in any manner a No safety valve, relief valve, or safety relief valve shall be altered in any manner.
- E. Repairs of fittings or appliances shall comply with the requirements of the *National Board Inspection Code, ANSI/NB-23 1995 Edition and 1996 addenda 1989 edition incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors.*
- F. Replacement of fittings or appliances shall comply with the requirements of the *ASME Boiler and Pressure Vessel Code, Sections I, II, IV, V, and IX, 1995 Edition and addenda as of June 30, 1997 ASME Code, 1989 Edition incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors.*
- G. No person shall remove or do any work on any safety appliance prescribed by this Article except as provided in applicable sections of the ASMC Code. Should any safety appliances be removed for repair during an outage of a boiler or lined hot water storage heater, they shall be reinstalled in proper working order before the boiler or lined hot water storage heater is placed in service

R20-5-407. Inspection of Boilers and Lined Hot Water Storage Heaters and Issuance of Inspection Certificates

- A. An authorized inspector. Authorized inspectors shall comply with the guidelines set forth in the *National Board Inspection Code, ANSI/NB-23 1995 1989 Edition and 1996 addenda, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors.*
- B. When as a result of an external inspection, it is determined that continued operation of the boiler or lined hot water storage heater constitutes a menace to public safety, the authorized

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inspector shall perform an internal inspection and appropriate pressure test to evaluate conditions.

B.C. ~~If in an owner, user, or operator owner/operator fails to comply with the requirements a requirement for an inspection or pressure test under this Article, the Division shall withhold the the authorized inspector shall decline to make the inspection or test and the inspection certificate shall be withheld until the owner, user, or operator owner/operator complies with these requirements the requirement.~~

C.D. ~~An As authorized inspector shall not engage in the sale of any object article or device relating to boilers, lined hot water storage heaters, or their appurtenances.~~

D.E. ~~Under A.R.S. § 23-485 (D) Within 60 days of the date of inspection, a special inspector shall submit inspection reports shall be submitted to the Division on forms equivalent to Form NV-6 of the National Board Inspection Code, Appendix G, 1995 1989 Edition and 1996 addenda, incorporated by reference and on file with the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated matter. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors.~~

E.F. ~~The Division shall issue to an owner or user an inspection certificate within 15 days of receipt of an inspection report that documents that If a boiler or lined hot water storage heater complies is found to comply with the Act and this Article, a valid inspection certificate shall be issued by the Division and posted by the An owner, user, or operator owner/operator of a boiler or lined hot water storage heater shall post the inspection certificate in the establishment where the boiler or lined hot water storage heater equipment is located.~~

F.G. ~~Immediately after installing Upon completion of the installation of a new steam boiler, or when an authorized inspector performs an at the time of an initial certificate inspection of an existing steam boiler, an owner, user, or operator shall ensure that an authorized inspector tags or stamps the steam boiler it shall be tagged or stamped by an authorized inspector with an identification number assigned by the Division. The identification number shall be no less than at least 5/16" inch in height and in of the following format:~~

AZ-# # #

G.H. ~~The Division shall mark with a metal dye stamp a Any boiler or lined hot water storage heater, having been inspected and declared by the Division as unfit for further service, shall be stamped with the code "XXX AZ8 XXX" which shall designate that the condemned boiler or lined hot water storage heater is condemned.~~

H.I. No Change.

R20-5-408. Frequency of Inspection

A. ~~An owner, user, or operator of a power boiler Power boilers, with the exception of coal-fired power boilers, shall ensure that an authorized inspector performs a certificate inspection and external inspection of the power boiler receive a certificate inspection every 12 months. Such boilers shall also An authorized inspector shall perform the external inspection while the power boiler is be inspected externally each year in operation to ensure that safety devices of the power boiler are operating properly, while under operating pressure.~~

B. ~~An authorized inspector shall perform an internal inspection and pressure test on a boiler or lined hot water storage heater if~~

~~the inspector determines from an external inspection of the boiler or lined hot water storage heater that continued operation of the boiler or lined hot water storage heater is a danger to public or worker safety.~~

C.B. ~~The Division shall issue a 12 month inspection certificate to an owner or user to operate a fully attended power boiler if:~~

1. ~~An owner, user, or operator ensures that an authorized inspector performs an external safety inspection and audit of the operational methods and logs of the fully attended boiler at least at every 12 months and performs an internal inspection of the fully attended power boiler at least every 24 months; and~~

2. ~~Inspection reports of an authorized inspector document that the fully attended boiler complies with A.R.S. § 23-471 et seq. and this Article.~~

~~Coal-fired power boilers shall receive a certificate inspection every 18 months.~~

D.C. ~~An owner, user, or operator of a direct Direct-fired jacketed steam kettle kettles shall ensure that an authorized inspector performs a certificate inspection of the direct-fired jacketed steam kettle receive a certificate inspection every 24 months.~~

E.D. ~~An owner, user, or operator of a heating Heating or process boiler boilers, not exceeding 15 p.s.i. maximum allowable working pressure, steam or vapor, shall ensure that an authorized inspector performs a certificate inspection of the heating or process boiler receive a certificate inspection every 24 months.~~

F.E. ~~An owner, user, or operator of a hot Hot water heating or and hot water supply boiler boilers shall ensure that an authorized inspector performs a certificate and external inspection of the hot water heating or hot water supply boiler receive an inspection at the time the hot water heating or hot water supply boiler is installed, of installation. An inspection certificate issued by the Division following an inspection under this subsection shall not state an expiration date. This inspection shall generate an inspection certificate with no expiration date. An owner, user, or operator of a hot Hot water heating or and hot water supply boiler boilers not exceeding 200,000 BTU per hour input and or a water temperature of 210° degrees F is shall be exempt from the inspections inspection required under this subsection.~~

G.F. ~~Except as provided in A.R.S. § 23-474(10), an owner, user, or operator of a lined Lined hot water storage heater heaters shall ensure that an authorized inspector performs a certificate and external inspection of the lined hot water storage heater receive an inspection at the time the heater is installed, of installation.~~

H.G. ~~An owner, user, or operator of a boiler or hot water storage heater shall ensure that an inspection required under A.R.S. § 23-471 et seq. and this Article is conducted no later than 30 days after an inspection certificate expires. An authorized inspector may conduct an inspection prior to expiration of the inspection certificate. A certificate inspection may be made prior to the certificate due date but shall not in any case be made later than 30 days after such date.~~

R20-5-409. Notification and Preparation for Inspection

A. ~~An authorized inspector shall perform a certificate inspection A certificate inspection shall be performed at a time mutually agreeable to the inspector and owner, user, or operator owner/operator.~~

B. ~~Before an authorized inspector performs an internal inspection of a boiler, an owner, user, or operator shall: The owner/oper-~~

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ator shall prepare each boiler for internal inspection in the following manner:

1. Cool the The furnace and combustion chambers shall be cooled prior to inspection;
2. Drain the water Water shall be drained from the boiler;
3. Remove the manhole Manhole and handhole plates, wash-out plugs, and inspection plugs in water column connections shall be removed;
4. Remove insulation Insulation or brickwork shall be removed if necessary to determine the condition of the boiler, headers, furnace, supports, and other parts;
5. Remove the The pressure gauge shall be removed for testing;
6. Prevent any Any leakage of steam or hot water into the boiler shall be prevented by disconnecting the involved pipe or valve;
7. Close, tag, and padlock the non-return and steam stop valves before Before opening the manhole or handhole covers and entering any part of the steam generating unit that is connected to a common header with other boilers, the non-return and steam stop valves shall must be closed, tagged, and padlocked. Open the The free blow drain or cock between the non-return and steam stop two valves shall be opened; and
8. Close, tag, and padlock the The blowoff valves shall be closed, tagged, and padlocked after draining the boiler. Open all All drains and vent lines shall be opened.

R20-5-410. Report of Accident

An owner, user, or operator shall immediately notify the Division The Division shall be notified by the owner/operator in case of an explosion, severe over-heating, or personal injury accident involving a boiler or lined hot water storage heater explosion, severe over-heating or personal injury. A person shall not remove or disturb the involved boiler or lined hot water storage heater or Notice shall be given immediately, and neither the involved boiler or lined hot water storage heater, nor any parts of the boiler or lined hot water storage heater thereof, shall be removed or disturbed before an investigation has been made by an authorized inspector, except for the purpose of preventing personal injury and/or limiting consequential damage.

R20-5-411. Hydrostatic Tests

- A. A hydrostatic test shall not exceed 1.5 times the maximum allowable working pressure. The pressure shall be controlled under proper control so that in no case shall the required test pressure does not be exceed 2% exceeded by more than two percent.
- B. During a hydrostatic the test, the safety valves shall be removed or each safety valve disc shall be held to the disc's its seat by means of a testing clamp. Safety valve discs shall not be held to the disc seat and not by screwing down the compression screw upon the spring. A plug device designed for this purpose may be used to hold a safety valve disc to the disc seat.
- C. No Change.

R20-5-412. Automatic Low-water Fuel Cutoff Devices or and/or Combined Water Feeding/Fuel Cutoff Devices

- A. An owner, user, or operator shall ensure that low-water Low-water fuel cutoff devices cutoffs or combined water feeder/fuel cutoff devices do not interfere with an operator's or inspector's ability to safely devices shall be located to provide

safe access clean, repair, test, or inspect for cleaning, repairing, testing, and inspection a boiler or lined hot water storage heater.

- B. A The low-water fuel cutoff device shall have a pressure rating not less than at least equal to the set pressure of the safety valve or safety relief valve.
- C. An In-probe-type low-water fuel cutoff devices, an open circuit failure, break, or disconnection of the electrical components or conductors in the safety circuit of a probe-type low-water fuel cutoff device shall prevent continued operation of the firing mechanism of the device.
- D. If an alarm is used, the alarm Alarms, when used, shall be clearly distinctly audible above the existing noise level; and may be used in conjunction with indicating lights. They shall be located to alert the operator of the boiler or lined hot water storage heater that a potentially dangerous situation is developing. An alarm may be used in conjunction with indicating lights.
- E. Each automatically fired high pressure steam boiler, except miniature boilers, and those constantly attended boilers, shall have at least 2 two automatic low-water fuel cutoff devices. Each cutoff device shall be installed to prevent start-up of the boiler and to automatically cut off the boiler fuel supply automatically when the surface of the water level of the boiler falls no to a level not lower than the lowest visible part of the gauge glass. Controls of the cutoff devices One control shall be set so that the cutoff devices to function sequentially ahead of the other.
- F. Each miniature boiler shall have at least 1 one low-water fuel cutoff device.
- G. The activation of the 2nd (lower) low-water fuel cutoff device of 2 cutoff devices set to function sequentially Functioning of the lower of the two cutoff devices shall cause a safety shutdown (lockout) of a boiler requiring manual reset of the boiler. A The manual reset device shall may be installed incorporated in the lower cutoff device, or may be installed in another location on the boiler as permitted under this Section, effected remotely. If Where a reset device is not installed in separate or remote from the low-water fuel cutoff device, an indicator a means shall reflect be provided to indicate that the low-water fuel cutoff device has caused a safety shutdown (lockout) of the boiler, has operated. The manual reset device may be an of the instantaneous type or use may include a time delay of not more than 3 three minutes after the fuel has been cut off.
- H. G-Except as otherwise permitted under this Article, a The low-water fuel cutoff device shall may be inserted internally or attached externally to a the boiler. An external cutoff device may be attached to piping that connects connecting a water column to a boiler or the external cutoff device may be combined with a water column. The pipe size of water Water column piping and connections to which an external cutoff device is attached or combined shall be at least 1" one inch pipe size. If a the low-water fuel cutoff device is connected to a the boiler by pipe or fittings, no shutoff valves of any type shall be placed in the connecting such piping. A cross or similar equivalent fitting shall be placed in the water piping at every right angle to facilitate cleaning and inspection of the boiler and low-water fuel cutoff device. Fuel cutoff devices embodying a separate chamber shall have a full size vertical drain pipe and blowoff valve no less the 3/4 inch pipe size located at the lowest point of the chamber device or water equalizing pipe con-

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nections, so that the device chamber and the equalizing pipe can be flushed and the fuel cutoff device tested.

I. H. ~~A system may incorporate a time-delay component may be combined with a~~ the low-water fuel cutoff device to prevent short cycling in the boiler system. The time-delay This component shall not constrict any connecting piping, and the time delay shall not exceed the boiler manufacturer's timing or 90 seconds, whichever is less. The low-water fuel cutoff device shall shut off fuel supply if when the water level falls to the lowest visible part of the gauge glass.

J. I. ~~A flow-sensing device may be installed instead of a In lieu of the requirements for low-water fuel cutoff device in devices, a water tube or coil-type boilers boiler that use requiring forced circulation to prevent overheating and failure. The shall have an accepted flow-sensing device shall to prevent burner operation when the circulating flow of the water tube or coil-type boiler is below a safe minimum of flow. Flow-sensing devices shall be located to ensure that the device will not be activated if a relief condition occurs.~~

K. J. ~~In addition to the requirements of subsections (A) through (E), the~~ The following requirements apply to for low-water fuel cutoff devices for steam boilers:

1. Each automatically-fired steam heating boiler shall have at least 1 one automatic low-water fuel cutoff or combined water feeder/fuel cutoff device. Boilers with a pumped condensate return shall have 2 two such cutoff devices, each attached with to separate connections to the boiler. Each low-water fuel cutoff device shall be installed to prevent start-up and to automatically shut out off the boiler fuel supply if automatically when the surface of the water level falls no to a level not lower than the lowest visible part of the gauge glass. If a A water feeding device is when used, it shall be constructed and installed so that the water inlet valve cannot feed water into the boiler through the float chamber or its connections to the boiler. The water feeding device shall be located to maintain the operating water level of the boiler.
2. ~~If a steam boiler has~~ When dual low-water fuel cutoff devices are used, the electrical circuit shall be connected in such a manner that either both devices device shall will shut off the fuel supply to the boiler if when a low water condition develops. The One low-water fuel cutoff devices device shall be set to function sequentially ahead of the other. The activation of the 2nd (lower) low-water fuel cutoff device Functioning of the lower of the two devices shall cause a safety shutdown (lockout) of the boiler requiring manual reset of the boiler. A The manual reset device shall may be installed incorporated in the lower cutoff device, or may be installed in another location on the boiler as permitted under this Section. effected remotely. If Where a reset device is not installed in separate or remote from the low-water fuel cutoff device, an indicator a means shall reflect be provided to indicate that the low-water fuel cutoff device has caused a safety shutdown (lockout) of the boiler, has operated. The manual reset device may be an of the instantaneous type or use may include a time delay of not more than 3 three minutes after the cutoff device has caused a fuel has been cut off.
3. ~~A The low-water fuel cutoff device shall may be inserted internally or attached externally to a boiler. An external cutoff device may be connected to water column piping.~~

The water column piping to which an external cutoff device is attached shall be at least 1" pipe size, which shall be not less than one inch pipe size. When the cutoff device is connected to the boiler by pipe and fittings, no shutoff valves of any type shall be placed in the connecting piping. A and a cross or similar equivalent fitting shall be placed in the water piping connection at every right angle to facilitate cleaning and inspection of the boiler and low-water fuel cutoff device. A full size drain valve and piping shall be installed on the lowest cross or similar fitting to facilitate testing of the low-water cutoff device, placed on the bottom of the lowest cross.

4. A low-water fuel cutoff or combined water feeder/fuel cutoff device may also be installed in the connection (tapped openings) -tapped openings that attaches available for attaching a water gauge glass directly to a boiler, provided the water gauge glass is connected connections are made to the boiler with nonferrous tees and wyes not less than 1/2 inch pipe size between the boiler and the water gauge glass so that the water gauge is attached directly and as closely close as possible to the boiler. The pipe size of a nonferrous tee and wye connecting a water gauge glass to the boiler shall be at least 1/2". The urn of the tee or wye shall connect to the water glass fitting; and the side outlet or branch of the tee or wye shall connect to the water feeder/fuel cutoff device. The ends of all pipe nipples shall be reamed to the full inside full-size diameter of the pipe.
5. ~~A low-water Low-water fuel cutoff device devices or combined water feeder/fuel cutoff device devices embedding a separate chamber shall have a vertical drain pipe and a blowoff valve, not less than 3/4 inch pipe size, located at the device lowest point of the chamber or water equalizing pipe connections to allow testing and flushing of so the device chamber and the equalizing pipe can be flushed and the device tested.~~
6. ~~A system may incorporate a time-delay component may be combined with a the low-water fuel cutoff device to prevent short cycling in the boiler system. The time-delay This component shall not constrict any connecting piping, and the time delay shall not exceed the boiler manufacturer's timing or 90 seconds, whichever is less. The low-water fuel cutoff device shall cut off the fuel supply if when the water level falls to the lowest visible part of the gauge glass.~~

L. K. ~~In addition to the requirements of subsections (A) through (E), the~~ The following requirements apply to for low-water fuel cutoff devices for hot water boilers:

1. ~~An Each~~ Each automatically fired hot water boiler shall be protected by a low-water fuel cutoff or combined feeder cutoff device designed suitable for hot water service.
2. ~~A Since there is no normal waterline to be maintained in a hot water boiler, the low-water fuel cutoff device shall can be located any place above the lowest safe permissible water level established by the boiler manufacturer.~~
3. ~~No provided no stop valves shall be are located between the boiler and control of a low-water fuel cutoff device.~~
4. ~~3. If a the low-water fuel cutoff device is located in the boiler system piping, the owner, user, or operator of the hot water boiler shall ensure that: it must assured that the~~
 - a. The float chamber drains will drain properly under a low water condition; and

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- b. ~~The the low-water cutoff device is installed so installation must be arranged to assure that if water flow occurs in the float chamber, the water flows it will be in the upward direction.~~
- 5.4. ~~A Functioning of the low-water fuel cutoff device due to a low water condition shall cause a safety shutdown (lockout) requiring a manual reset if low water conditions occur. If Where a reset device is not installed in separate or remote from the low-water fuel cutoff device, an indicator a means shall reflect be provided to indicate that the low-water fuel cutoff device has caused a safety shutdown (lockout) operated. The manual reset device may be an instantaneous type or may use include a time delay of not more than 3 three minutes after the fuel has been cut off.~~
- 6.5. ~~An owner, user, or operator shall provide a method to test A means shall be provided for testing the operation of a the low-water fuel cutoff device without resorting to draining the piping entire system of the boiler. The method of testing Such means shall not render the low-water fuel cutoff device unsafe or inoperable.~~

R20-5-413. Safety and Safety Relief Valves

- A. ~~A No valve of any description shall not be placed between a the safety valve and a boiler or between a the safety valve and the safety valve discharge point.~~
- B. ~~A discharge When an escape pipe is used, it shall be the full size of the safety outlet. The discharge escape pipe shall be fitted with a drain to prevent water from accumulating lodging in the discharge escape pipe and in the upper part of the safety valve.~~
- C. ~~Safety All safety valve discharge piping shall not discharge water or steam into be so located as to clear walkways or platforms.~~
- D. ~~In addition to the requirements of subsections (A) through (C), the following requirements apply to safety Safety valves for power boilers shall meet the following requirements:~~
1. ~~A power Each boiler shall have at least 1 safety valve, except that if - If the heating surface of a power boiler exceeds it has more than 500 square feet of heating surface, or the an electric input of the power boiler is greater more than 500 kilowatts, the power boiler it shall have at least 2 or more safety valves;~~
 2. ~~Safety valves shall be connected to the power boiler independent of any other steam connection, and shall be attached as closely close as possible to the power boiler without unnecessary intervening pipe or fittings;~~
 3. ~~A The safety valve capacity for a power of each boiler shall have the capacity to be such that the safety valve will discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than 6% six percent above the highest pressure to which any valve is set, and in no case more than 6% six percent above the maximum allowable working pressure of the power boiler;~~
 4. ~~The minimum relieving capacity of a safety valve or safety relief valve relieving capacity for power boilers, other than electric boilers and forced flow steam generators without with no fixed steam and water lines line, shall be determined on the basis of the pounds of steam generated per hour per square foot of the boiler heating surface and water wall heating surface;~~
 5. ~~The minimum relieving capacity of a safety valve or safety relief valve relieving capacity for electric boilers shall be 3.5 pounds per hour per kilowatt input;~~
 6. ~~A power boiler shall have 1 One or more safety valves on every boiler shall be set at or below the maximum allowable working pressure. The remaining safety valves may be set within a range of 3% three percent above the maximum allowable working pressure, but the The range of settings for all safety valves on the boiler shall not exceed 10% ten percent of the highest pressure to which any valve is set;~~
 7. ~~If 2 When two or more connected power boilers operate, operating at different pressures and safety valve settings, are intereconnected, the lower low pressure boiler and intereconnected piping connecting the boilers shall be equipped with safety valves of sufficient capacity to prevent over pressure of the lower pressure boiler and connecting piping, considering the maximum generating capacity of the connected all boilers;~~
 8. ~~When a power In those cases where the boiler is supplied with feed-water directly from a the-water main -mains without the use of a feeding apparatus, no safety valves valve shall not be set at a pressure greater than 94% percent of the lowest pressure obtained in the water supply main feeding the boiler;~~
 9. ~~Weighted The use of weighted lever safety valves or safety valves having either a cast iron the seat or disk shall not be used of cast iron is prohibited. Safety valves Valves of this type construction shall be replaced by valves that conform to the requirements of the ASME Boiler and Pressure Vessel Code, Section I, 1995 Edition and addenda as of June 30, 1997, incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the American Society of Mechanical Engineers. ASME Code, Section I, 1989 Edition; and.~~
 10. ~~No safety valve shall be smaller than 1/2" one-half inch and no larger than 6" six-inch standard pipe size.~~
- E. ~~In addition to the requirements of subsections (A) through (C), the following requirements apply to safety Safety valves for heating boilers shall meet the following requirements:~~
1. ~~A Each steam heating boiler shall have at least 1 one or more ASME rated and stamped safety valve valves of the spring-loaded pop-type, adjusted and sealed, to relieve the total capacity of the boiler discharge sufficient capacity at a pressure not to exceed 15 p.s.i.g. Seals shall be attached to each safety valve in a manner to prevent tampering or resetting of the valve valves;~~
 2. ~~A Each hot water heating or hot water supply boiler shall have at least 1 one or more safety relief valve to relieve the total capacity of the boiler without exceeding valves of sufficient capacity set to discharge at a pressure not to exceed the maximum allowable working pressure of the boiler; and;~~
 3. ~~Hot Each hot water heating boilers boiler installed in parallel (side by side), having a pump return, shall have check valves installed on either side of a stop valve on the common return header.~~

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F.D. ~~In addition to the requirements of subsections (A) through (C), the following requirements shall apply to lined hot water storage heaters:~~

1. ~~A~~ Each lined hot water storage heater shall have at least 1 one ASME-rated and stamped, pressure/temperature, automatic reseating relief valve of the automatic reseating type. Valves shall be set to discharge at or below the maximum allowable working pressure of the heater and shall be equipped with a test lever;
2. The minimum relieving capacity of the relief valves shall be determined ~~governed~~ by the BTU-per-hour output of the burner that is; stamped on the data plate of the lined hot water storage heater; and;
3. The minimum relieving capacity of the valves on an electric lined hot water storage heater shall be 3,500 BTU per hour for each kilowatt rating.

R20-5-414. Pressure-reducing valves

- A. ~~If a~~ When pressure-reducing valve is valves are used, at least 1 one or more relief or safety valve valves shall be provided on the low pressure side of the reducing valve if when the piping or equipment on the low pressure side does not meet the requirements of the high pressure side. Relief The relief or safety valves shall be placed next to ~~located adjoining~~ or as close as possible to the reducing valve. A relief or safety valve shall not discharge escaping fluid into walkways or an area in which individuals work. Proper protection shall be provided to prevent injury or damage caused by the escaping fluid from the discharge of relief or safety valves.
- B. A hand-controlled bypass on a ~~The use of hand-controlled bypasses around reducing valve valves is permissible. If a hand-controlled bypass is used on around a~~ the reducing valve, the safety valve required on the low pressure side shall have the be of sufficient capacity to relieve all pressure the fluid that can pass through the bypass without overpressuring the low pressure side.
- C. A pressure gauge shall be installed on the low pressure side and next adjacent ~~to~~ the reducing valve.

R20-5-415. Boiler Blowdown/Blowoff Equipment

- A. Except as provided in this Section, an owner, user, or operator of blowdown/blowoff ~~Blowdown~~ equipment shall comply with conform to the provisions set forth in the National Board Rules and Recommendations for the Design and Construction of Boiler Blowoff Systems, 1991 1973 Edition, (but not including any later amendments or additions) which is incorporated herein by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material, except that the minimum thickness of blowdown vessels shall be 3/16 inch. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors.
- B. Blowdown from a boiler is considered a hazard to life and ~~or~~ property and;
- C. Blowdown from a boiler shall pass through blowdown equipment that reduces which shall reduce pressure and temperature to levels not exceeding 5 p.s.i.g. and 140° 150 degrees F.
- D. The thickness of a blowdown vessel shall be at least 3/16"
- E. ~~C.~~ All blowdown equipment shall be fitted with openings that allow to facilitate cleaning and inspection of the equipment.

F.D. ~~Blowdown separators may be used in conjunction with boilers instead in lieu of boiler blowdown tanks, provided that the blowdown separators they are operated with a temperature gauge and water cooler to prevent the drain water temperature from exceeding 140° 150 degrees F.~~

G.E. ~~In addition to the requirements of subsections (A) through (F), the following requirements apply to blowdown. Blowdown piping and valves for power-boilers shall conform to the following requirements:~~

1. Each power boiler shall have 2 two valves on the blow-down piping. The valves shall be designed for the pressure and temperature of the maximum operating pressure of the boiler. The blowdown piping. These valves shall may be either have 2 slow-opening valves or 1 slow-opening and 1 quick-opening valve. The slow-opening valve shall be a of the wye type valve construction , except that or angle valves may be used in vertical pipes, or they may be used in horizontal runs of piping, if the angle valves provided they are so constructed or installed so that the lowest edge of the opening through the seat is at least 25 % percent of the inside diameter below the center line of the valve.
2. Globe valves, gate valves, and other valves that have dams or other pockets where sediment may collect shall not be used in a blowdown system service.
3. Quick-opening valves, including ball valves, shall be constructed and approved in accordance with ANSI/ ASME B31.1-1995 1986 Edition, *Power Piping*, (but not including any later amendments or editions) which is incorporated herein by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the American Society of Mechanical Engineers.
4. ~~2.~~ If When a the safety valve setting is set greater than in excess of 100 p.s.i., the boiler blowdown piping shall be constructed of heavy duty pipe. construction (Schedule 80 Pipe). For purposes of this subsection, heavy duty pipe means Schedule 80 black iron pipe or stronger.
5. ~~3.~~ Size of boiler blowdown/blowoff bottom blowdown piping and valves shall comply with be as shown in Table I.

Table I

Minimum Required Safety or Safety Relief Valve Capacity (pounds of steam per hour)	Blowdown/Blowoff Piping and Valve Size
Up to 500	3/4"
501 to 1250	1"
1251 to 2500	1 1/4"
2501 to 6000	1 1/2"
6001 and larger	2"

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Table I

Size of Bottom Blowoff Piping and Valves	
Minimum Required	Blowoff
Safety or Safety Relief Valve	Valves
Capacity, lb. of steam per hr.	Size, in.
Up to 500	3/4
501 to 1250	1
1251 to 2500	1 1/4
2501 to 6000	1 1/2
6001 and larger	2

H. F. In addition to the requirements of subsections (A) through (F), the following requirements apply to bottom blowdown or drain valves for heating boilers:

1. A Each hot water heating boiler shall have a bottom blowdown or drain pipe connection fitted with a valve or cock connected with the lowest available water space practicable with the minimum size of blowdown piping and valves as shown in Table I.
2. A boiler that has having a capacity of no more than 25 gallons or less and a minimum drain valve size of 3/4" is exempt from subsection F, and provided they have a three-quarter inch pipe size minimum drain valve.
3. Discharge piping connected to a bottom blowdown or bottom drain connection, or both, shall be full size to the discharge.

I. G. The discharge outlets of blowdown pipes, safety valves, and other piping shall be located and structurally supported to prevent injury to individuals personnel.

R20-5-416. Maximum Allowable Working Pressure

A. The ASME Code under which a boiler was constructed and stamped shall determine the maximum allowable working pressure for the a ASME stamped standard boiler (i.e., one that bears the ASME stamping) shall be determined in accordance with the applicable provisions of the ASME Code under which it was constructed and stamped.

B. The maximum allowable working pressure for any cast iron boiler shall be 30 p.s.i.g. (unless otherwise rated by the manufacturer) water service or 15 p.s.i.g. steam service.

R20-5-417. Maintenance and Operation of Power Boilers; Qualifications for Operators of Power Boilers

A. An owner, user, or operator of a boiler constructed under the in accordance with ASME Code, Sections I, II, IV, V, or IX having an output capacity in excess of 400,000 BTU per hour shall comply with the manufacturer's maintenance and operation instructions for the boiler, and

B. In addition to the requirements of subsection (A), an owner, user, or operator of a boiler constructed under the ASME Code, Sections I, II, IV, V, or IX shall comply with the following preventive maintenance schedule if the boiler contains the component or system listed forth paragraphs (1) through (5):

1. On a daily basis, the owner, user, or operator owner/operator shall:
 - a. Test the low-water fuel cutoff and alarm, and;
 - b. Check the burner flame for proper combustion.
2. On a weekly basis, the owner, user, or operator owner/operator shall:
 - a. Check for proper ignition, and;
 - b. Check the flame failure detection system.
3. On a monthly basis, the owner, user, or operator owner/operator shall:

- a. Test all fan and air pressure interlocks;
 - b. Check the main burner safety shutoff valve;
 - c. Check the low fire start switch;
 - d. Test For oil-fired units, test fuel pressure and temperature interlocks of oil-fired units, and;
 - e. Test the For gas-fired units, test high and low fuel pressure switch of gas-fired units.
4. Every 6 months Semiannually, the owner, user, or operator owner/operator shall:
 - a. Inspect burner components;
 - b. Check flame failure system components, such as vacuum tubes, amplifier, and relays;
 - c. Check wiring of all interlocks and shutoff valves;
 - d. Recalibrate all indicating and recording gauges; and;
 - e. Check steam and blowdown piping and valves.
 5. Annually, the owner, user, or operator owner/operator shall:
 - a. Replace vacuum tubes, scanners, or flame rods in the flame failure system according to in accordance with the manufacturer's instructions;
 - b. Check all coils and diaphragms; and;
 - c. Test operating parts of all safety shutoff and control valves.

C. B. An owner, user, or user of a power boiler owner/operator having title to, or control over, the operation of a boiler, as described in subsection (A), shall act as, or designate an individual, a qualified boiler operator that meets the requirements of subsection (D) to operate the boiler. An owner, user, or user may operate the boiler if the owner, user, or user meets the requirements of subsection (D).

D. A qualified boiler operator that meets the requirements of subsection (D) shall be on the premises at all times a power boiler is in operation.

E. A qualified boiler operator of a power boiler shall meet the following minimum requirements: The minimum standards to be used by the owner/operator to determine a qualified operator are:

1. Knowledge of and an ability Ability to explain the function and operation of all safety controls of on the boiler; under his control.
2. Ability to start light off the boiler in a safe manner;
3. Knowledge The knowledge of all existing safe methods of feeding water to the boiler;
4. Knowledge The knowledge of and the ability to blow down the boiler in a safe manner;
5. Knowledge The knowledge of safety procedures to follow should water exceed or drop below the permissible safety safe levels; and;
6. Knowledge of and the ability The knowledge of how to safely shut down the boiler.

R20-5-418. Age Limit of Non-standard Boilers

A. An owner, user, or operator shall remove from service a Any non-standard boiler (i.e., one that does not bear an the ASME stamp stamping) shall not be continued in service, unless the boiler operates properly and safely after an inspector performs an, after a thorough internal and external inspection and, no distress or leakage develops during a hydrostatic pressure test of 1 1/2 times the allowable working pressure held for at least 30 minutes. The inspections and test required under this subsection shall be performed on an annual basis and any time an

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owner, user, or operator suspects that a boiler cannot be operated safely.

- B. Any non-standard boiler having lap-riveted longitudinal joints shall be removed from service and condemned.

R20-5-419. Request to Reinstall Boiler or Lined Hot Water Heater

- A. The Division shall grant or deny permission to reinstall a boiler or lined hot water heater within 3 working days after an owner or user requests permission to reinstall the boiler or lined hot water heater. The order of the Division granting or denying permission to reinstall a boiler shall be in writing.
- B. The Division shall grant permission to reinstall a boiler or lined hot water heater if the boiler or lined hot water heater complies with A.R.S. § 23-471 et seq. and this Article. The Division shall deny permission to reinstall a boiler or lined hot water storage heater if the boiler or lined hot water storage heater fails to comply with A.R.S. § 23-471 et seq. and this Article.
- C. An order of the Division denying permission to reinstall a boiler shall be final unless an owner or user requests a hearing under A.R.S. § 23-479 within 15 days after the Division mails the order. The owner or user requesting a hearing shall have the burden to burden that a boiler meets the requirements of A.R.S. § 23-471 et seq. and this Article.

R20-5-420. Special Inspector Certificate Under A.R.S. § 23-485

A. Review Time-frames.

1. Administrative Completeness Review.

- a. The Division shall determine if an application to take a written examination or request for a special inspector certificate under A.R.S. § 23-485 is complete within 3 days of receipt of the application or request. The Division shall inform the applicant whether the application or request is complete or incomplete by written notice. If the application or request is incomplete, the Division shall include in its written notice to the applicant a complete list of the missing information.
- b. The Division shall deem an application or request withdrawn if an applicant fails to file a complete application or request within 10 days of being notified by the Division that the application or request is incomplete, unless the applicant obtains an extension to provide the missing information. An applicant may obtain an extension to submit the missing information by filing a written request with the Division no later than 10 days after the Division mails notice that the application or request is incomplete. The written request for an extension shall state the reasons the applicant is unable to meet the 10 day deadline. If an extension will enable the applicant to assemble and submit the missing information, the Division shall grant an extension of not more than 10 days and provide written notice of the extension to the applicant.

2. Substantive review.

- a. Application to take written examination under A.R.S. § 23-485(A). Within 3 days after the Division deems an application complete under subsection (B), the Division shall determine whether the

applicant is eligible to take the National Board Examination.

- b. Request for special inspector certificate under A.R.S. § 23-485. Within 3 days after the Division deems a request complete under subsection (C), the Division shall determine whether the applicant meets the criteria of A.R.S. § 23-485 and subsection (C).

3. Overall review. The overall review period shall be 6 days, unless extended under A.R.S. § 41-1072 et seq.

B. Application to take Written Examination under A.R.S. § 23-485(A).

1. An application to take the written examination under A.R.S. § 23-485 (A) is deemed complete under subsection (A)(1) when an applicant files a complete and notarized application to take the National Board Examination.
2. An individual requesting to take the written examination under A.R.S. § 23-485(A) shall complete an application to take the National Board Examination on a form approved by the Commission at least 45 days before the date of the examination.
3. The application to take the National Board Examination shall be filed with the Division. An application is considered filed when it is received at the office of the Division and stamped by the Division with the date of filing.
4. An application to take the National Board Examination shall be typewritten or written in legible text.
5. The individual completing the application to take the National Board Examination shall sign the application. The signature shall be notarized.

C. Application for Special Inspector Certificate under A.R.S. § 23-485.

1. An application for a special inspector certificate under A.R.S. § 23-485 is deemed complete under subsection (A)(1) when the following is filed with the Division:
- a. The applicant provides written documentation that the applicant holds a certificate of competency as a inspector of boilers or lined hot water storage heaters for a state that has a standard of examination substantially equal to that of Arizona or the applicant holds a commission as an inspector of boilers and pressure vessels issued by the National Board of Boiler and Pressure Vessel Inspectors; and
- b. The applicant provides proof of employment as a full time inspector for a company operating or insuring boilers or lined hot water storage heaters in Arizona and whose duties as an inspector include making inspections of boilers or lined hot water storage heaters to be used or insured by the company and not for resale.

D. Notice of Eligibility.

1. If an applicant is eligible to take the National Board Examination, the Division shall issue a written notice of eligibility to the applicant. If an applicant is not eligible to take the National Board Examination, the Division shall issue a written notice denying eligibility to the applicant. The written notice shall contain findings of fact and conclusions of law. The Commission shall deem the notice denying eligibility final if an applicant does not request a hearing within 15 days after the Division mails the notice.

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2. If an applicant meets the criteria of A.R.S. § 23-485 and subsection (C), the Division shall issue a certificate to the applicant under subsection (G). If an applicant fails to meet the criteria of A.R.S. § 23-485 and subsection (C), the Division shall issue a written notice denying eligibility to the applicant. The written notice shall contain findings of fact and conclusions of law. The Commission shall deem the notice denying eligibility final if an applicant does not request a hearing within 15 days after the Division mails the notice.
- E. Written Examination under A.R.S. § 23-485(A).**
1. The written examination described in A.R.S. § 23-485(A) shall be the National Board Examination of the National Board of Boiler and Pressure Vessel Inspectors.
 2. The Division shall administer the National Board Examination the 1st Wednesday and Thursday of every March, June, September, and December to eligible applicants. The Division shall return to the National Board of Boiler and Pressure Vessel Inspectors examinations taken by eligible applicants within 2 days after an examination is taken by an applicant. Examinations shall be graded by the National Board of Boiler and Pressure Vessel Inspectors.
 3. An applicant is qualified to take the National Board Examination if the applicant meets the criteria established by the National Board of Boiler and Pressure Vessel Inspectors, *Rules and Regulations*, Article I, NB 215, 1994, which is incorporated by reference and on file with the Office of the Secretary of State. This incorporation does not include any later amendments or editions of the incorporated material. A copy of this referenced material is available for review at the Industrial Commission of Arizona and may be obtained from the National Board of Boiler and Pressure Vessel Inspectors.
 4. A passing grade of the National Board Examination is 70%.
 5. The Division shall provide written notice to an applicant of the applicant's grade for the National Board Examination within 3 days after the Division receives notice of the grade from the National Board of Boiler and Pressure Vessel Inspectors.
 6. The Division shall issue a certificate of competency to an applicant that passes the National Board Examination.
- F. Issuance of Special Inspector Certificate.** The Division shall issue a special inspector certificate A.R.S. § 23-485 to an applicant no later than 3 days after the Division determines that an applicant meets the criteria of A.R.S. § 23-485 and subsection (C).
- G. Hearing on Denial of Eligibility for Special Inspector Certificate.**
1. A request for hearing protesting a notice of eligibility shall be in writing and signed by the applicant or the applicant's legal representative. The applicant shall file the request for hearing with the Division.
 2. The Commission shall hold a hearing under A.R.S. § 41-1065. The hearing shall be stenographically recorded.
 3. The Chair of the Commission or designee shall preside over hearings held under this Section. The Chair shall apply the provisions of A.R.S. § 41-1062 et seq. to hearings held under this Section and shall have the authority and power of a presiding officer as described in A.R.S. § 41-1062.
 4. A decision of the Commission to deny or grant eligibility for a special inspector certificate shall be based upon the criteria set forth in A.R.S. § 23-485 and this Section and shall be made by a majority vote of the quorum of Commission members present when the decision is rendered at a public meeting. After a decision is rendered at a public meeting, the Commission shall issue a written decision upon hearing which shall include findings of fact and conclusions of law, separately stated. An order of the Commission denying a special inspector certificate is final unless an applicant files a request for review within 15 days after the Commission mails its order.
 5. A request for review shall be based upon 1 or more of the following grounds which have materially affected the rights of an applicant:
 - a. Irregularities in the hearing proceedings or any order or abuse of discretion whereby the applicant seeking review was deprived of a fair hearing;
 - b. Misconduct by the Division;
 - c. Accident or surprise which could not have been prevented by ordinary prudence;
 - d. Newly discovered material evidence that could not have been discovered with reasonable diligence and produced at the hearing;
 - e. Excessive or insufficient sanctions or penalties imposed at hearing;
 - f. Error in the admission or rejection of evidence, or errors of law occurring at, or during the course of, the hearing;
 - g. Bias or prejudice of the Division; and
 - h. The order, decision, or findings of fact are not justified by the evidence or are contrary to law.
 6. The Commission shall issue a decision upon review no later than 30 days after receiving a request for review.
 7. The Commission's decision upon review is final unless an applicant seeks judicial review as provided in A.R.S. § 23-483.